

WHAT IS CLAIMED IS:

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1. A method for preparing a manganese compound for a lithium manganese complex oxide, comprising the step of simultaneously applying a mechanical force and a heat energy to a manganese compound to remove defects present in particles of said manganese compound, and to control the aggregation of micro particles and the shape of the aggregated particles.
2. The method for preparing the manganese compound according to claim 1, wherein a mechanical force and a heat energy are simultaneously applied to said manganese compound with adding one or more kinds of preparations selected from the group consisting of LiOH, LiOH · H<sub>2</sub>O, LiCH<sub>3</sub>COO, LiCHO, LiCHO · H<sub>2</sub>O, LiNO<sub>3</sub>, and a transition metal salt having a melting point of 200 °C or less.
3. The method for preparing the manganese compound according to claim 2, wherein the amount of said preparations is 0 to 20 wt% of the manganese compound.
4. The method for preparing the manganese compound according to claim 1, wherein said manganese compound is selected from the group consisting of electrolytic manganese dioxide (MnO<sub>2</sub>; EMD), chemical manganese dioxide (MnO<sub>2</sub>; CMD), Mn<sub>2</sub>O<sub>3</sub> and Mn<sub>3</sub>O<sub>4</sub>.
5. The method for preparing the manganese compound according to claim 2, wherein said manganese compound is selected from the group consisting of electrolytic manganese dioxide (MnO<sub>2</sub>; EMD), chemical manganese dioxide (MnO<sub>2</sub>; CMD), Mn<sub>2</sub>O<sub>3</sub> and Mn<sub>3</sub>O<sub>4</sub>.
6. The method for preparing the manganese compound according to claim 1, wherein the applied mechanical force is 0.1 to 1000 dyne/cm<sup>2</sup>, the range of the temperature of the applied heat energy is 50 to 200 °C, and the applied time is 5 minutes to 5 hours.
7. The method for preparing the manganese compound according to claim 2, wherein the applied mechanical force is 0.1 to 1000 dyne/cm<sup>2</sup>, the range of the temperature of the applied heat energy is 50 to

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200 °C, and the applied time is 5 minutes to 5 hours.

8. The method for preparing the manganese compound according to claim 1, wherein a manganese compound having a shape without edge parts is prepared by using an angular shaped manganese compound as a raw material and applying mechanical force and heat energy.

9. The method for preparing the manganese compound according to claim 2, wherein a manganese compound having a shape without edge parts is prepared by using an angular shaped manganese compound as a raw material and applying mechanical force and heat energy.

10. A method for preparing lithium manganese complex oxide with a spinel structure, comprising the steps of:

a) mixing

(i) a manganese compound prepared by the method comprising the step of simultaneously applying a mechanical force and a heat energy to a manganese compound to remove defects present in the particles of said manganese compound and to control the aggregation of micro particles and the shape of the aggregated particles; and

(ii) a lithium compound ; and

b) calcining the mixture prepared in said step (a).

11. A method for preparing a lithium manganese complex oxide with a spinel structure according to claim 10, wherein the (ii) lithium compound of step (a) is selected from a lithium salt group consisting of LiOH, LiOH · H<sub>2</sub>O, LiCH<sub>3</sub>COO, LiCHO, LiCHO · H<sub>2</sub>O and LiNO<sub>3</sub>.

12. A method for preparing the lithium manganese complex oxide with a spinel structure according to claim 10, wherein the temperature of calcination of said step (b) is 400 to 900 °C, and the time of calcination is 1 to 30 hours.

13. A method for preparing the lithium manganese complex oxide with a spinel structure according to claim 11, wherein the temperature

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of calcination of said step (b) is 400 to 900 °C, and the time of calcination is 1 to 30 hours.

14. A lithium or lithium ion secondary battery comprising an anode, an electrolyte and a cathode using a lithium manganese complex oxide powder with a spinel structure as an active material, wherein said  
5 active material is a lithium manganese complex oxide with a spinel structure prepared by the method comprising the steps of:

a) mixing

10 (i) a manganese compound prepared by the method comprising the step of simultaneously applying a mechanical force and a heat energy to a manganese compound to remove defects present in particles of the manganese compound and to control the aggregation of micro particles and the shapes of the aggregated particles; and

(ii) a lithium compound; and

15 b) calcining the mixture.

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